Release notes for ENDF/B Development n-050_Sn_118 evaluation

April 26, 2017

- **checkr** Warnings:

  1. A previous error halted parsing of the current section
     MAT=5043, MF= 1, MT=451 (1): Parsing stopped

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 1, MT=451
         SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER     233 TO     273
     ```

- **checkr** Errors:

  1. A variable is outside the allowed ENDF range
     MAT=5043, MF= 1, MT=451 (0): Variable range

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 1, MT=451
         MOD =    1 OUT OF RANGE    0 -    0          RECORD NUMBER    233
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 2, MT=151 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 2, MT=151
         SECTION  2/151 NOT IN DIRECTORY              RECORD NUMBER    275
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 3, MT= 1 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 3, MT=  1
         SECTION  3/  1 NOT IN DIRECTORY              RECORD NUMBER    386
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 3, MT= 2 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 3, MT=  2
         SECTION  3/  2 NOT IN DIRECTORY              RECORD NUMBER    412
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 3, MT= 4 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 3, MT=  4
         SECTION  3/  4 NOT IN DIRECTORY              RECORD NUMBER    438
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 3, MT= 16 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 16
         SECTION  3/ 16 NOT IN DIRECTORY              RECORD NUMBER    451
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=5043, MF= 3, MT= 17 (0): Directory (b)

1

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 17
          SECTION  3/ 17 NOT IN DIRECTORY                RECORD NUMBER    462
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=5043, MF= 3, MT= 22 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 22
          SECTION  3/ 22 NOT IN DIRECTORY                RECORD NUMBER    469
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=5043, MF= 3, MT= 28 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 28
          SECTION  3/ 28 NOT IN DIRECTORY                RECORD NUMBER    482
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 51 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 51
          SECTION  3/ 51 NOT IN DIRECTORY                RECORD NUMBER    492
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 52 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 52
          SECTION  3/ 52 NOT IN DIRECTORY                RECORD NUMBER    505
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 53 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 53
          SECTION  3/ 53 NOT IN DIRECTORY                RECORD NUMBER    517
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 54 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 54
          SECTION  3/ 54 NOT IN DIRECTORY                RECORD NUMBER    528
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 55 (0): Directory (b)

```
       ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 55
          SECTION  3/ 55 NOT IN DIRECTORY                RECORD NUMBER    539
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 3, MT= 56 (0): Directory (b)

2

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 56
          SECTION  3/ 56 NOT IN DIRECTORY                RECORD NUMBER     549
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}\ 57\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 57
          SECTION  3/ 57 NOT IN DIRECTORY                RECORD NUMBER     559
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}\ 91\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT= 91
          SECTION  3/ 91 NOT IN DIRECTORY                RECORD NUMBER     569
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}102\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT=102
          SECTION  3/102 NOT IN DIRECTORY                RECORD NUMBER     578
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}103\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT=103
          SECTION  3/103 NOT IN DIRECTORY                RECORD NUMBER     598
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}104\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT=104
          SECTION  3/104 NOT IN DIRECTORY                RECORD NUMBER     612
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}105\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT=105
          SECTION  3/105 NOT IN DIRECTORY                RECORD NUMBER     624
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 3,\ MT{=}107\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 3, MT=107
          SECTION  3/107 NOT IN DIRECTORY                RECORD NUMBER     634
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
    $MAT{=}5043,\ MF{=}\ 4,\ MT{=}\ 2\ (0){:}\ Directory\ (b)$

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT=  2
           SECTION  4/  2 NOT IN DIRECTORY                 RECORD NUMBER     651
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 16 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 16
           SECTION  4/ 16 NOT IN DIRECTORY                 RECORD NUMBER     815
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 17 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 17
           SECTION  4/ 17 NOT IN DIRECTORY                 RECORD NUMBER     826
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 22 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 22
           SECTION  4/ 22 NOT IN DIRECTORY                 RECORD NUMBER     837
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 28 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 28
           SECTION  4/ 28 NOT IN DIRECTORY                 RECORD NUMBER     848
```

28. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 51 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 51
           SECTION  4/ 51 NOT IN DIRECTORY                 RECORD NUMBER     859
```

29. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 52 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 52
           SECTION  4/ 52 NOT IN DIRECTORY                 RECORD NUMBER     882
```

30. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 53 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 53
           SECTION  4/ 53 NOT IN DIRECTORY                 RECORD NUMBER     905
```

31. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 54 (0): Directory (b)

4

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 54
            SECTION  4/ 54 NOT IN DIRECTORY                RECORD NUMBER     928
```

32. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 55 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 55
            SECTION  4/ 55 NOT IN DIRECTORY                RECORD NUMBER     951
```

33. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 56 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 56
            SECTION  4/ 56 NOT IN DIRECTORY                RECORD NUMBER     974
```

34. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 57 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 57
            SECTION  4/ 57 NOT IN DIRECTORY                RECORD NUMBER     997
```

35. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 4, MT= 91 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 4, MT= 91
            SECTION  4/ 91 NOT IN DIRECTORY                RECORD NUMBER    1020
```

36. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 5, MT= 16 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 5, MT= 16
            SECTION  5/ 16 NOT IN DIRECTORY                RECORD NUMBER    1044
```

37. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 5, MT= 17 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 5, MT= 17
            SECTION  5/ 17 NOT IN DIRECTORY                RECORD NUMBER    1101
```

38. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 5, MT= 22 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=5043, MF= 5, MT= 22
            SECTION  5/ 22 NOT IN DIRECTORY                RECORD NUMBER    1126
```

39. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 5, MT= 28 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=5043, MF= 5, MT= 28
         SECTION  5/ 28 NOT IN DIRECTORY               RECORD NUMBER     1306
```

40. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=5043, MF= 5, MT= 91 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=5043, MF= 5, MT= 91
         SECTION  5/ 91 NOT IN DIRECTORY               RECORD NUMBER     1393
```

- `groupie` Errors:

  1. Very small elastic cross section found
     0: Small elastic

```
      Multi-Group and Multi-Band Parameters from ENDF/B Data (GROUPIE 2015-2)
      ----------------------------------------------------------------------------
      ENDF/B Input and Output Data Filenames
      ENDFB.IN
      ENDFB.OUT
      ... [97 more lines]
```

- `fudge-4.0` Warnings:

  1. Missing a channel with a particular angular momenta combination
     resonances / resolved / MultiLevel_BreitWigner (Error # 0): missingResonanceChannel

```
      WARNING: Missing a channel with angular momenta combination L = 0, J = 1.5 and S = 1.5 for "capture"
      WARNING: Missing a channel with angular momenta combination L = 1, J = 0.5 and S = 1.5 for "capture"
      WARNING: Missing a channel with angular momenta combination L = 1, J = 1.5 and S = 1.5 for "capture"
      WARNING: Missing a channel with angular momenta combination L = 1, J = 2.5 and S = 1.5 for "capture"
```

  2. Cross section does not match sum of linked reaction cross sections
     crossSectionSum label 0: total (Error # 0): CS Sum.

```
      WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.75%
```

  3. Cross section does not match sum of linked reaction cross sections
     crossSectionSum label 1: (z,n) (Error # 0): CS Sum.

```
      WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.16%
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated Q values disagree.
     reaction label 9: n[multiplicity:'2'] + Sn117 (Error # 0): Q mismatch

```
      WARNING: Calculated and tabulated Q-values disagree: -9113025.914627075 eV vs -9.3308e6 eV!
```

  2. Calculated and tabulated Q values disagree.
     reaction label 10: n[multiplicity:'3'] + Sn116 (Error # 0): Q mismatch

```
      WARNING: Calculated and tabulated Q-values disagree: -16056186.68495178 eV vs -1.62797e7 eV!
```

  3. Calculated and tabulated Q values disagree.
     reaction label 11: n + H1 + In117 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -9785587.279800415 eV vs -1.00032e7 eV!
```

4. Calculated and tabulated Q values disagree.
   reaction label 12: Sn119 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 6698021.282409668 eV vs 6484490. eV!
```

5. Calculated and tabulated Q values disagree.
   reaction label 13: n + He4 + Cd114 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -3845634.252502441 eV vs -4055890. eV!
```

6. Calculated and tabulated Q values disagree.
   reaction label 15: H2 + In117_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -7561021.178863525 eV vs -7693110. eV!
```

7. Calculated and tabulated Q values disagree.
   reaction label 16: H3 + In116_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -10070129.70443726 eV vs -1.02751e7 eV!
```

8. Calculated and tabulated Q values disagree.
   reaction label 17: He4 + Cd115_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 2295227.900650024 eV vs 2093610. eV!
```

- `njoy2012` Warnings:

  1. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
     groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 16
                          only mf4/mf5 provided
```

  2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
     groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 17
                          only mf4/mf5 provided
```

  3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
     groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 22
                          only mf4/mf5 provided
```

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)

   ```
    ---message from conver---cannot do complete particle production for mt= 28
                            only mf4/mf5 provided
   ```

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)

   ```
    ---message from conver---cannot do complete particle production for mt= 91
                            only mf4/mf5 provided
   ```